



INVENTING

INVENTION MERIT BADGE

- Very new merit badge in 2010
- Replaces Invention merit badge
 - Available from 1911 - 1915
 - Required patenting a new invention
 - Only earned by 10 boys
- Still requires inventing, but no patenting
- Closely related to a lot of other merit badges



RESOURCES

- MeritBadge.org - Inventing Workbook and resources
- Scouting.org - Official requirements and resources
- Google.com/Patents, FreePatentsOnline.com
- Makezine.com, InventorsDigest.com

Read This!



REQUIREMENTS (COVERED)

1. In your own words, define inventing. Then do the following:

a. Explain to your merit badge counselor the role of inventors and their inventions in the economic development of the United States.

b. List three inventions and state how they have helped humankind.

2.b. Read about three inventors. Select the one you find most interesting and tell your counselor what you learned.

3.a. Define the term intellectual property. Explain which government agencies oversee the protection of intellectual property, the types of intellectual property that can be protected, how such property is protected, and why protection is necessary.

3.b. Explain the components of a patent and the different types of patents available.

3.d. Explain to your counselor the term patent infringement.

4. Discuss with your counselor the types of inventions that are appropriate to share with others, and explain why. Tell your counselor about one non-patented or non-copyrighted invention and its impact on society.

9. Discuss with your counselor the diverse skills, education, training, and experience it takes to be an inventor. Discuss how you can prepare yourself to be creative and inventive to solve problems at home, in school, and in your community. Discuss three career fields that might utilize the skills of an inventor.

REQUIREMENTS (LATER)

3.c. Examine your Scouting gear and find a patent number on a camping item you have used. With your parent's permission, use the Internet to find out more about that patent. Compare the finished item with the claims and drawings in the patent. Report what you learned to your counselor.

5. Choose a commercially available product that you have used on an overnight camping trip with your troop. Make recommendations for improving the product, and make a sketch that shows your recommendations. Discuss your recommendations with your counselor.

6. Think of an item you would like to invent that would solve a problem for your family, troop, chartered organization, community, or a special-interest group. Then do EACH of the following, while keeping a notebook to record your progress:

a. Talk to potential users of your invention and determine their needs. Then, based on what you have learned, write a statement describing the invention and how it would help solve a problem. This statement should include detailed sketch of the invention.

b. Create a model of the invention using clay, cardboard, or any other readily available material. List the materials necessary to build a prototype of the invention.

c. Share the idea and the model with your counselor and potential users of your invention. Record their feedback in your notebook.

7. Build a working prototype of the item you invented for requirement 6*. Test and evaluate the invention. Among the aspects to consider in your evaluation are cost, usefulness, marketability, appearance, and function. Describe how your original vision and expectations for your invention are similar or dissimilar to the prototype you built. Have your counselor evaluate and critique your prototype.

Before you begin building the prototype, you must have your counselor's approval, based on the design and building plans you have already shared.

8. Do ONE of the following:

a. Participate with a club or team (robotics team, science club, or engineering club) that builds a useful item. Share your experience with your counselor.

b. Visit a museum or exhibit dedicated to an inventor or invention, and create a presentation of your visit to share with a group such as your troop or patrol.

WHAT IS INVENTING?

To create something new or improved
that is useful or helpful.

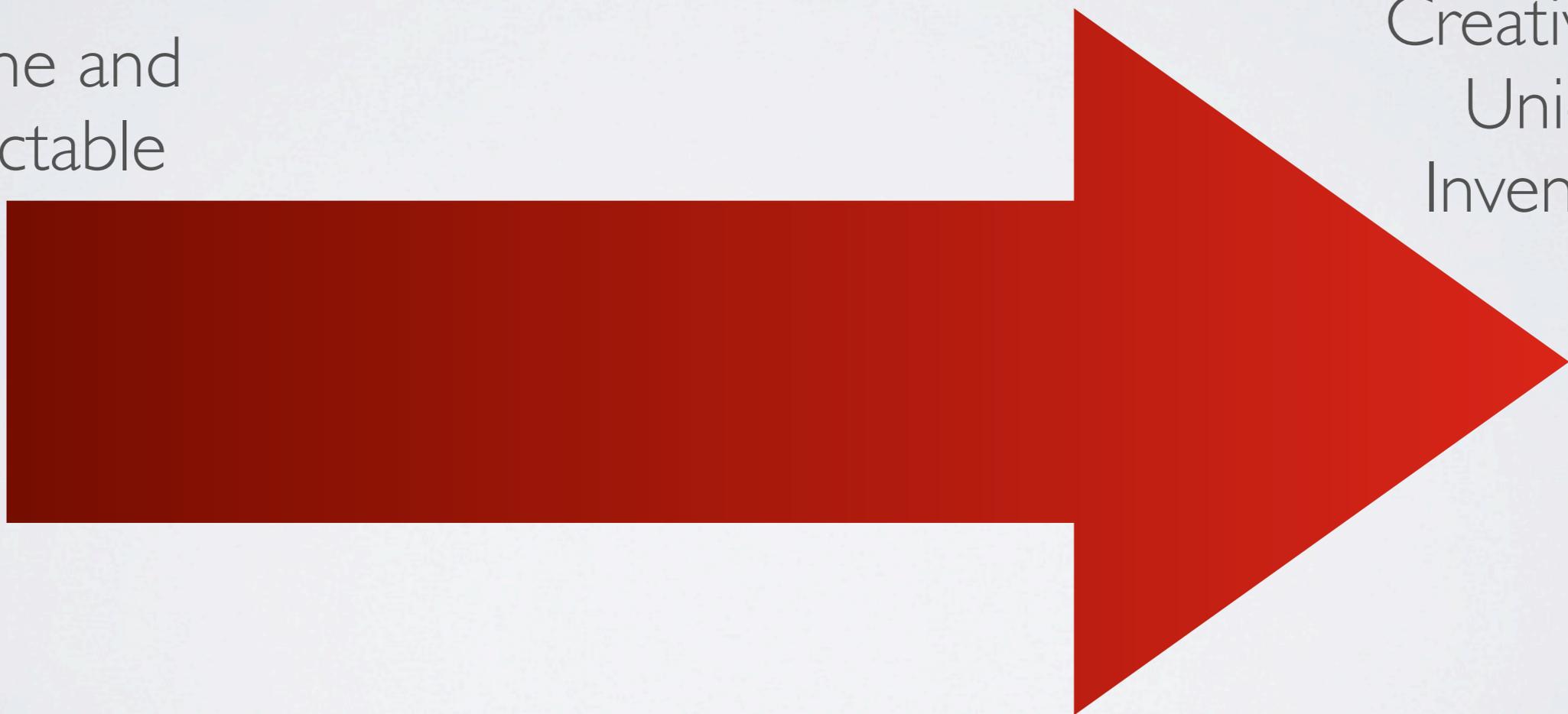


HOW TO BE AN INVENTOR

- Ask Why, How & What if?
- Not be satisfied with the way things are.
- See problems as opportunities.
- Keep a written record of problems, ideas, research, etc.
- Always keep learning!

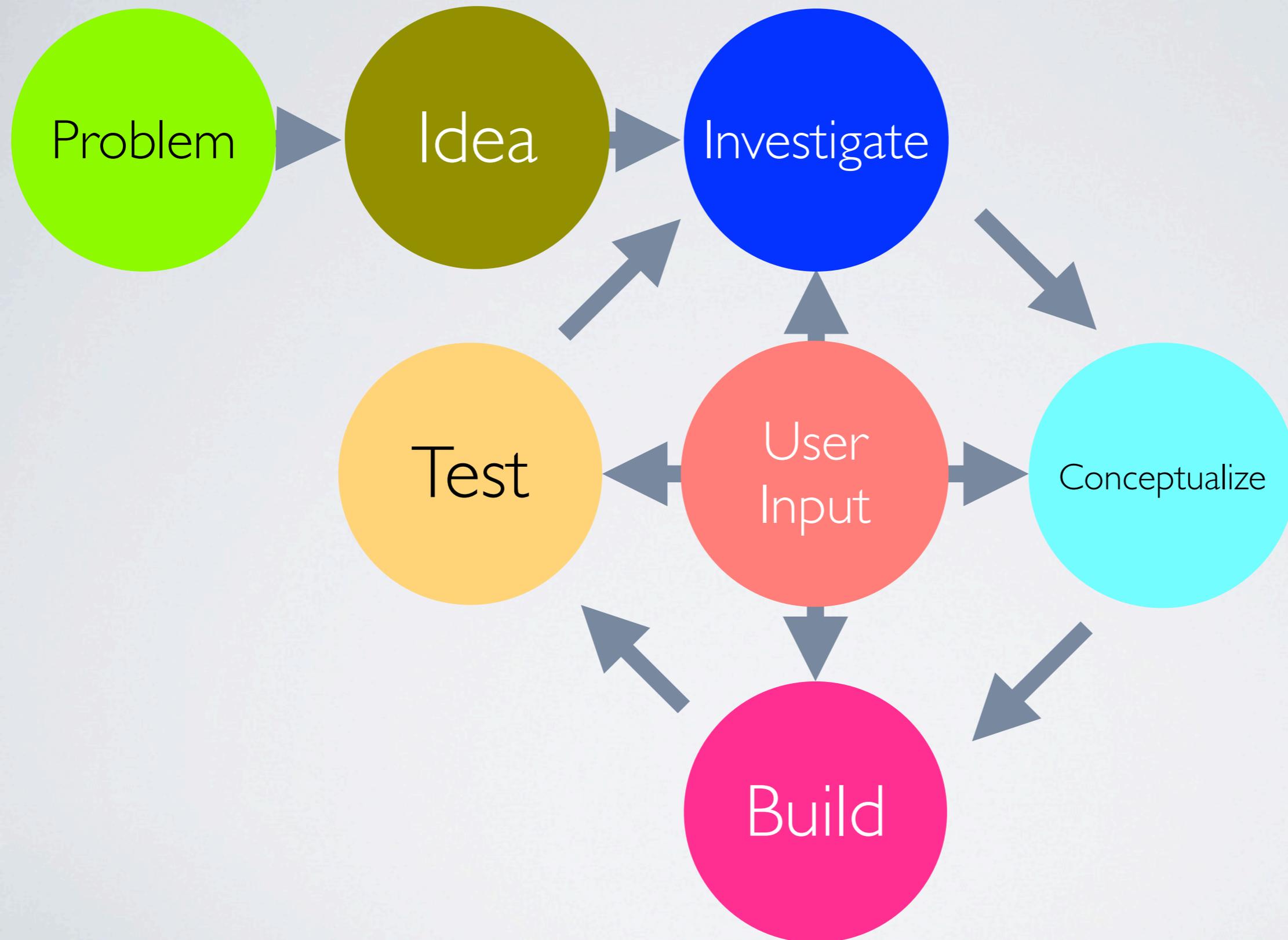
SPECTRUM OF PROBLEM SOLVING

Routine and
Predictable

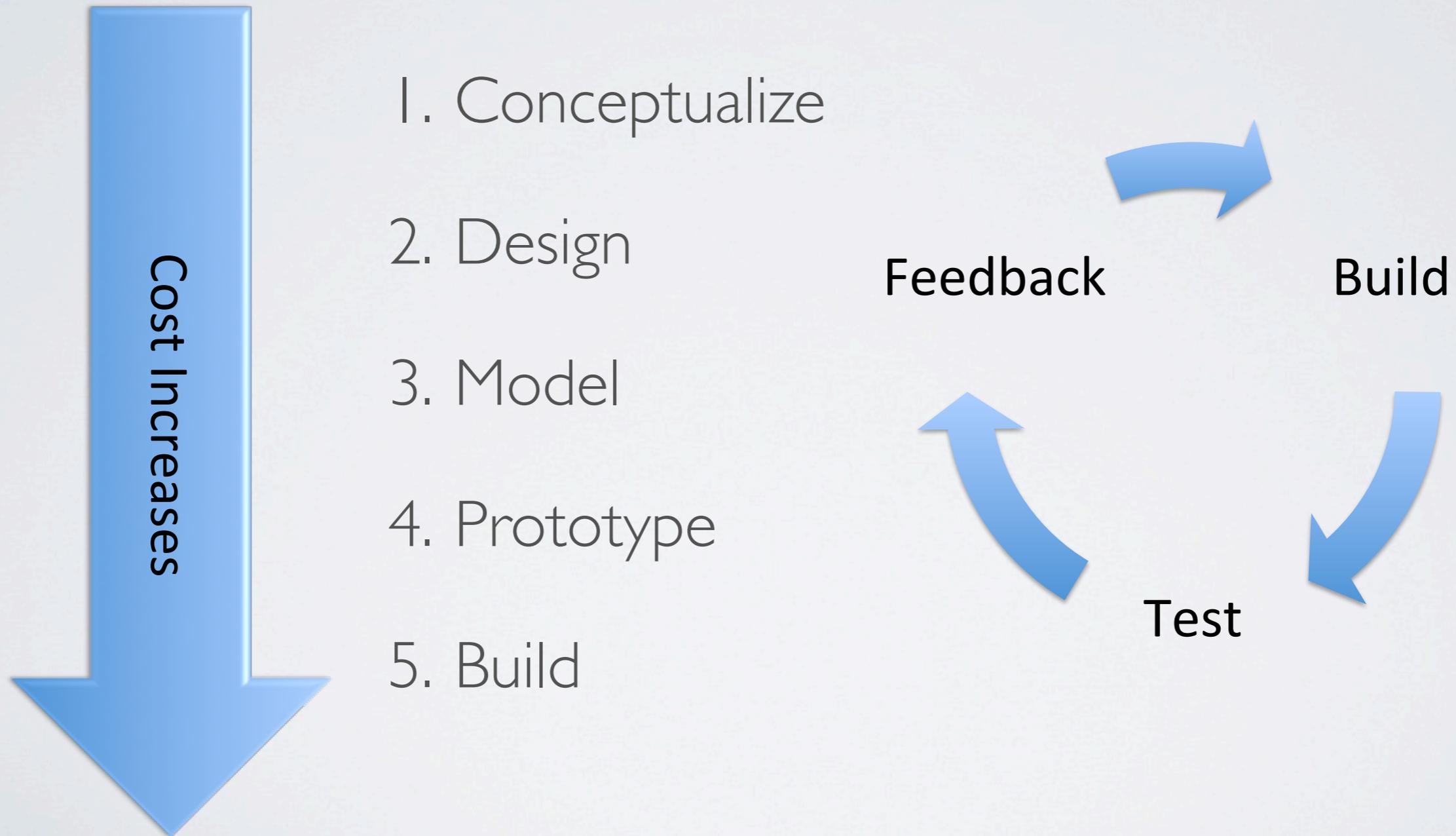


Creative and
Unique
Inventions

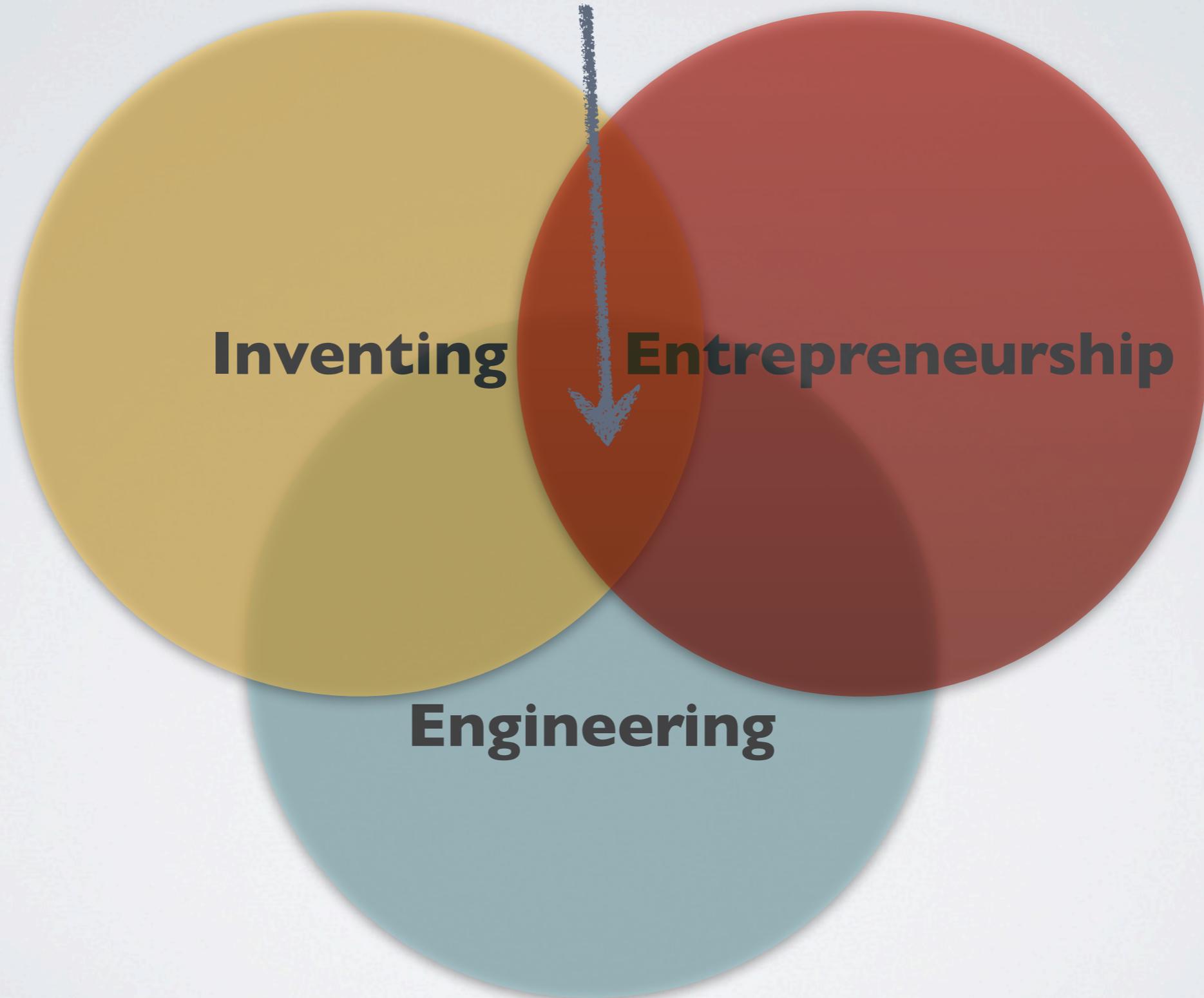
INVENTION PROCESS



BUILD PROCESS



INNOVATION



HOW DOES INNOVATION HELP THE U.S. ECONOMY?

- Create new products to sell
- More efficient ways to do things
- Extend and improve life of citizens
- Provide more leisure time for recreation
- *Macroinventions* lead to new industries and *Microinventions*

FAMOUS INVENTIONS

- Mechanical Reaper - Cyrus McCormick (1809 - 1884)
- Integrated Circuit - Microchip - Jack Kilby (1923 - 2005)
- Air Plane - powered flight - Wright Brothers (1867 - 1948)
- Moving Assembly Line - Henry Ford (1863-1947)
- Electronic Television - Philo T. Farnsworth (1906 - 1971)
- World Wide Web - Hyper Text - Tim Berners-Lee (1955 -)
- Bright Blue LED - Shuji Nakamura (1954 -)
- Wheel - Ancient Mesopotamians - 5000 B.C.

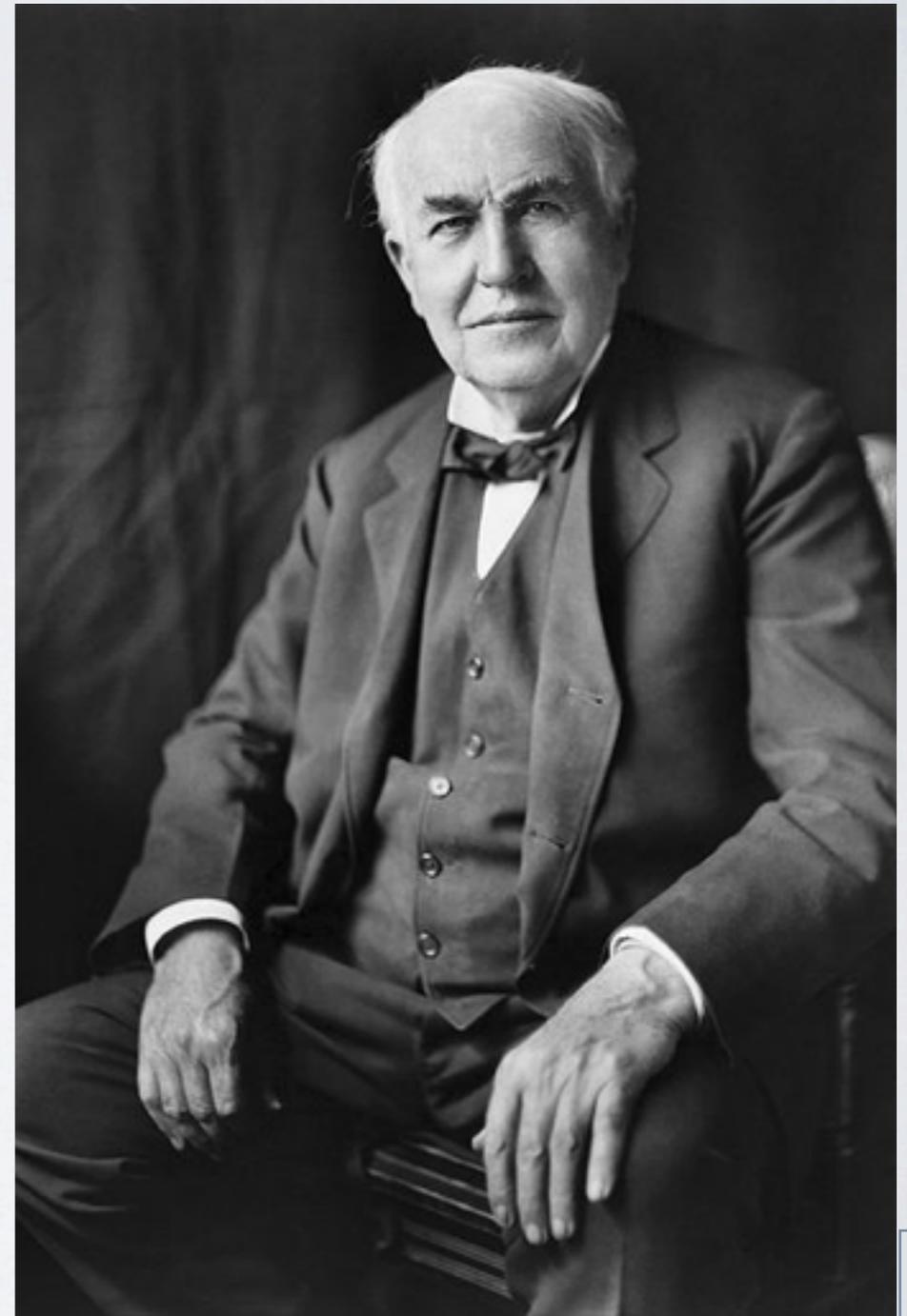
FAMOUS INVENTIONS

How have they helped humankind?

THOMAS ALVA EDISON

Thomas A Edison

- 3rd most U.S. utility patents ever
- 1,093 U.S. patents and 2,332 total patents world wide
- Electric power, electric lighting, batteries, phonograph, cement, telegraphy, mining
- Lived 1847–1931
- “Genius is one percent inspiration, ninety-nine percent perspiration.”



THOMAS ALVA EDISON

Thomas A Edison

- American inventor, scientist, and businessman.
- Only had three months of official schooling. Home-schooled by mother for rest of education.
- “If I find 10,000 ways something won't work, I haven't failed. I am not discouraged, because every wrong attempt discarded is another step forward.”



THOMAS ALVA EDISON

Thomas A Edison

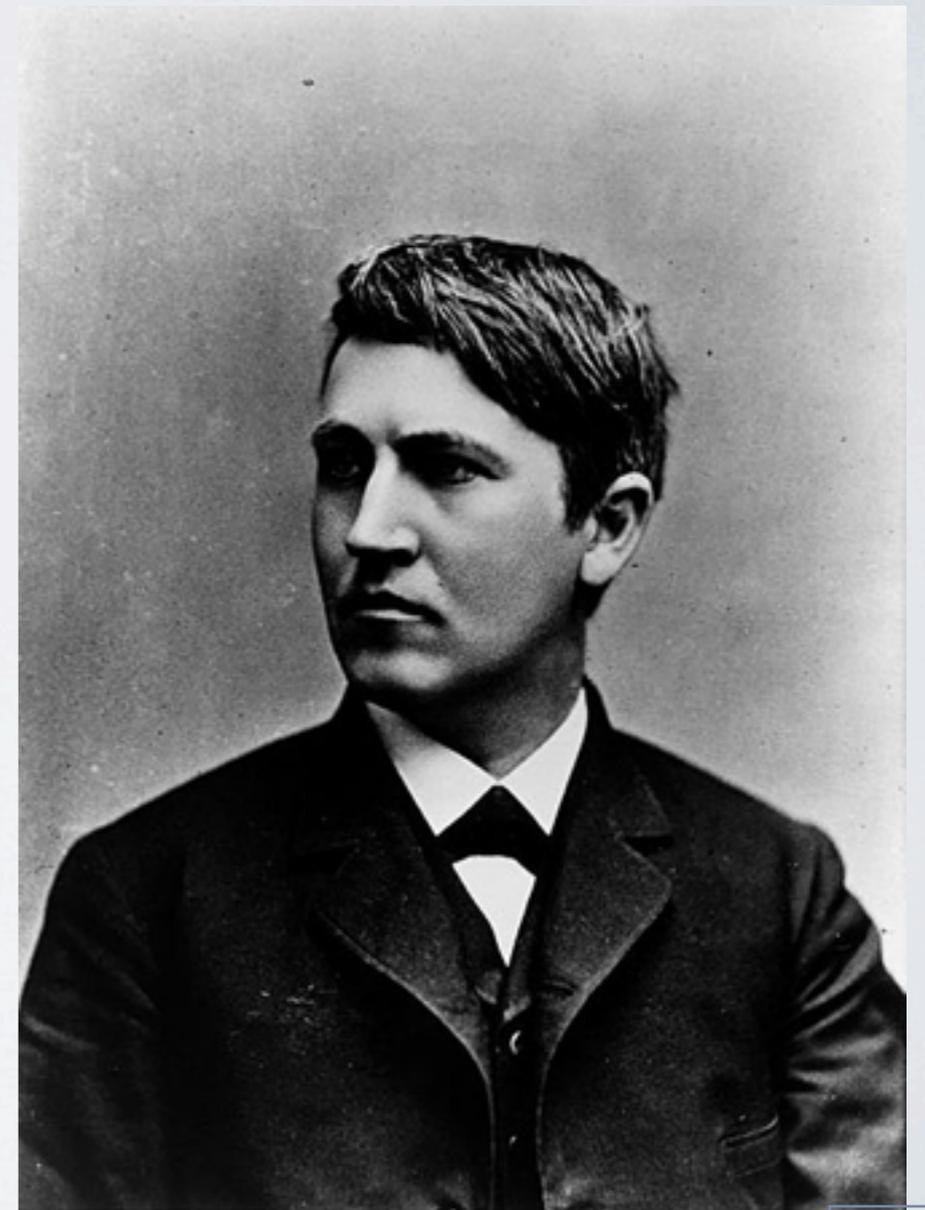
- Didn't believe in wasting time on inventions people didn't want to buy.
- Favorite invention was gramophone. Was very hard of hearing and would press jaw bone against it to hear music.
- "Everything comes to him who hustles while he waits."



THOMAS ALVA EDISON

Thomas A Edison

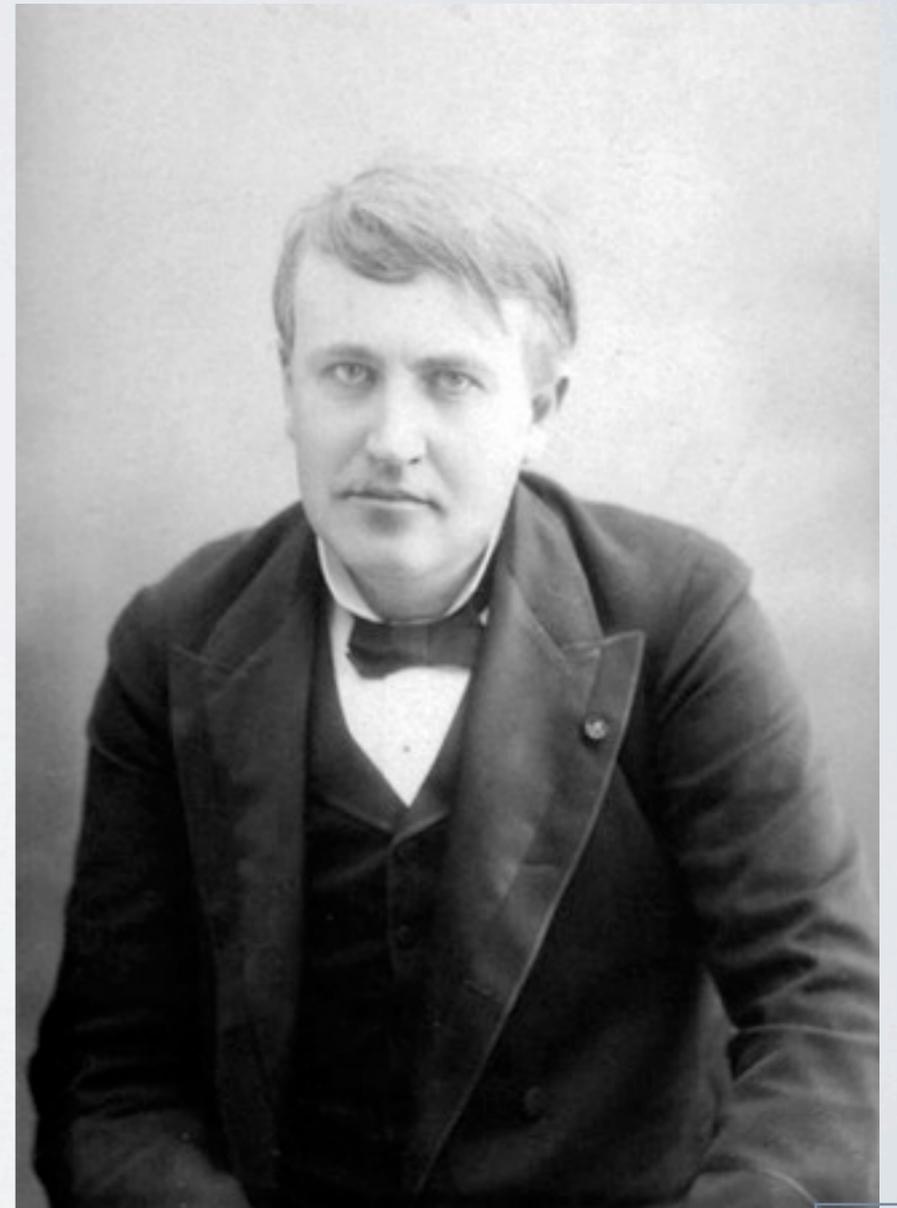
- Nonviolence was key to Edison's moral views, and when asked to serve as a naval consultant for World War I, he specified he would work only on defensive weapons.
- Success came from ability to maximize profits through establishment of mass-production systems and intellectual property rights.
- “Opportunity is missed by most people because it is dressed in overalls and looks like work.”



THOMAS ALVA EDISON

Thomas A Edison

- What did you learn about Thomas Edison?
- What did he invent?
- How was he successful?
- What motivated him?
- Can you quote him?



INTELLECTUAL PROPERTY

- Legal recognition of property (as an idea, invention, or process) that derives from the work of the mind or intellect
- A work or invention that is the result of creativity, such as a manuscript or a design, to which one has rights and for which one may apply for a patent, copyright, trademark, etc.
- Gives owners limited exclusive rights in exchange.
- Usually requires full disclosure.

COPYRIGHT

- Applies to musical, literary, and artistic works *fixed in tangible form*
- Automatic in the United States, but requires registration to litigate
- Individual works: 70 years after the death of the creator
- Works for hire: 120 years after creation or 95 years after publication (whichever is shorter)

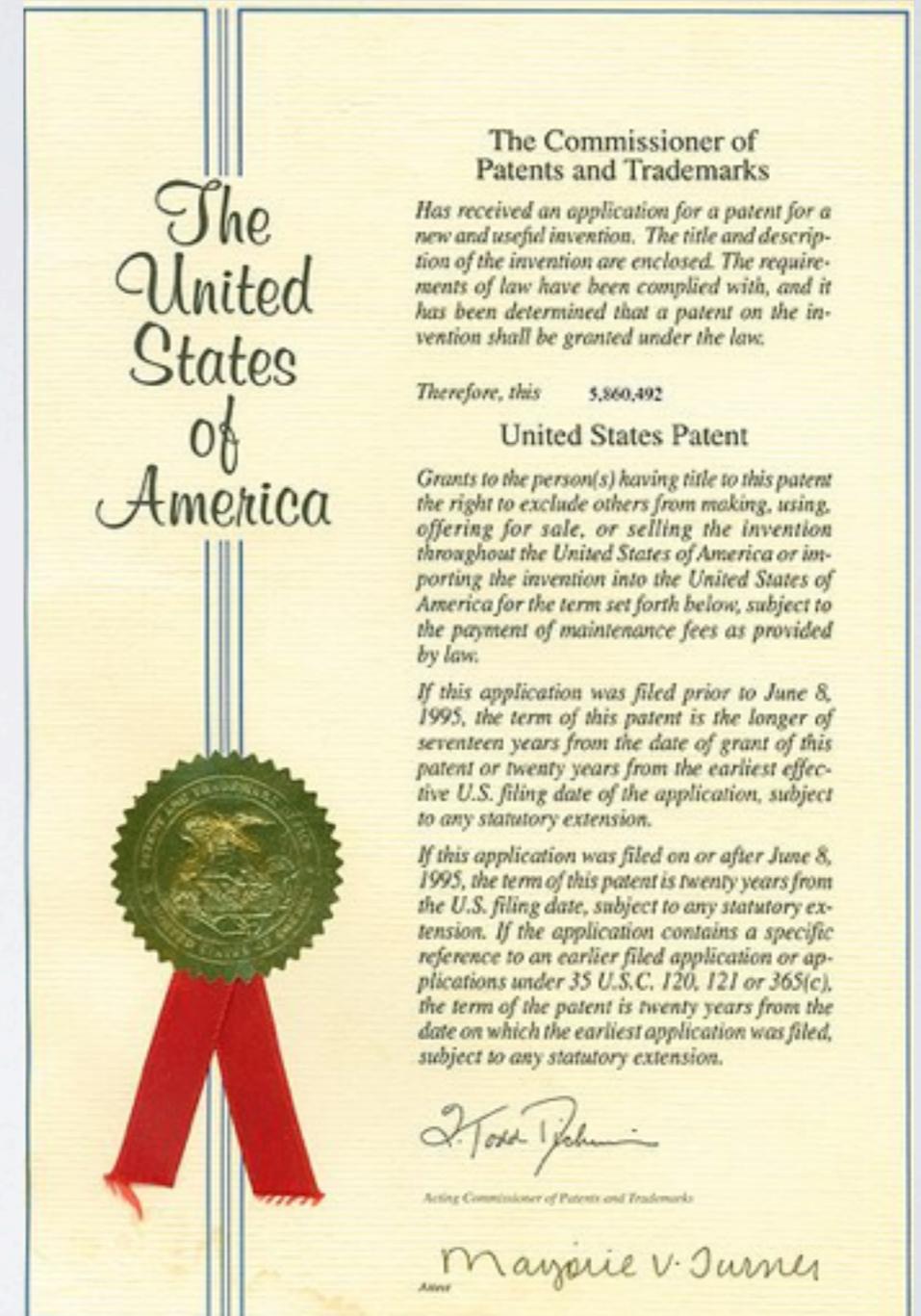


TRADEMARK

- Applies to distinctive words, phrases, symbols, and designs
- Used by an individual or business organization to identify that the products or services originate from a unique source.
- **TM** - Unregistered Trademark (free)
- **®** - Registered Trademark (requires registration and fee)
- Must register to litigate
- Perpetual rights if maintained - used and defended

PATENT

- Applies to discoveries, inventions and improvements, not “ideas”
- Must be novel, useful and non-obvious
- Requires full disclosure and registration (enough to enable reproduction)
- Lengthy and expensive registration process
- Good for 40 years, subject to limited renewals
- Protects against others independently discovering



TRADE SECRETS

- Similar to patents, but kept a total secret instead of fully disclosed.
- Only protected as long as kept a secret.
- Must have economic value and be used commercially.
- Illegal to disclose trade secrets protected under non-disclosure agreement.
- Lost if discovered independently by someone else

U.S. PATENT AND TRADEMARK OFFICE

- uspto.gov
- Part of Department of Commerce
- No international or global jurisdiction.



U.S. COPYRIGHT OFFICE

- copyright.gov
- Part of Library of Commerce
- No international or global jurisdiction.



REVIEW IP

- Which government agencies oversee the protection of intellectual property?
- What types of intellectual property that can be protected?
- How is such property is protected?
- Why is protection necessary?





US007581715B2

(12) **United States Patent**
Ball et al.

(10) **Patent No.:** **US 7,581,715 B2**

(45) **Date of Patent:** **Sep. 1, 2009**

(54) **POWERED ROPE ASCENDER AND PORTABLE ROPE PULLING DEVICE**

(75) Inventors: **Nathan Ball**, Cambridge, MA (US);
Timothy Fofonoff, Cambridge, MA (US); **Bryan Schmid**, Boston, MA (US);
Daniel Walker, Cambridge, MA (US)

(73) Assignee: **Atlas Devices, LLC**, Cambridge, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **11/780,596**

(22) Filed: **Jul. 20, 2007**

(65) **Prior Publication Data**
US 2008/0017838 A1 Jan. 24, 2008

Related U.S. Application Data

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(Continued)

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International Search Report, from corresponding PCT/US2006/014830, dated Aug. 11, 2006.

- (63) Continuation of application No. 11/376,721, filed on Mar. 15, 2006, now Pat. No. 7,261,278.
 - (60) Provisional application No. 60/673,212, filed on Apr. 20, 2005, provisional application No. 60/717,343, filed on Sep. 15, 2005.
 - (51) **Int. Cl.**
B66D 1/36 (2006.01)
 - (52) **U.S. Cl.** **254/325; 254/371**
 - (58) **Field of Classification Search** 254/278, 254/282, 323, 325, 326, 333, 342, 371; 182/133, 182/142
- See application file for complete search history.

(Continued)

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(57)

ABSTRACT

A device for pulling an elongate member includes a powered rotational motor having an output and a rotating drum connected to the output of said rotational motor where the rotating drum has a longitudinal axis and a circumference. The device further includes a guide mechanism for guiding the resilient elongate element onto, around at least a portion of the circumference of, and off of, the rotating drum. When the powered rotational motor turns the rotating drum, the rotating drum thereby continuously pulls the resilient elongate element through the device.

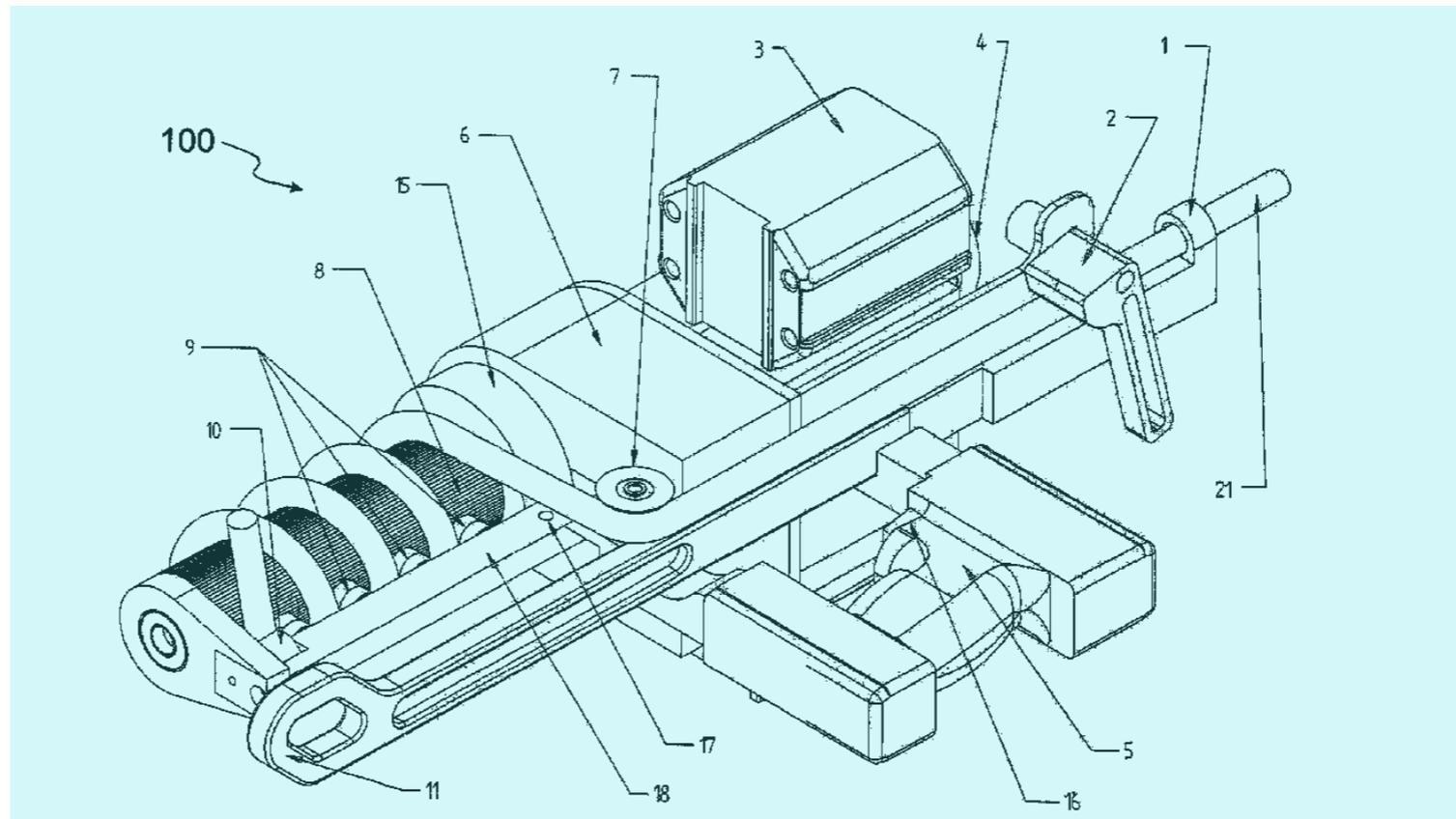
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3,126,166 A	3/1964	Weinberg

20 Claims, 11 Drawing Sheets



TYPES OF PATENTS

- **Utility Patents** - Useful process, machine, device, or improvement thereof (includes software patents, etc.)
- **Design Patents** - Ornamental design of a functional item
- **Plant Patent** - For discovery or creation of new variety of plant
- **Business method patent** - New way of doing business

PATENT INFRINGEMENT

- Manufacturing, using or selling a patented invention without license (permission) to do so
- Does not require knowledge of patent
- Specific to territorial jurisdiction of patent
- Specific claims are listed for each patent

SHARING vs. PROTECTING

- Open source - Linux, Open Office, etc. (Copyleft) 
- Creative Commons - Wikipedia, Academic Earth, 
- Contributed for general good - non-patented inventions
- Public domain - Project Gutenberg, Shakespeare
- Standard information - Lists, calendars, measures, etc.

WHEN AND WHY TO SHARE?

- When would you not get a patent?
- What are the advantages of not getting a patent?
- How can you share a creative work that is subject to copyright?
- Name a non-patented or freely licensed work. How does it impact society?



INVENTING AS A CAREER

- Typically an inventor is a creative and innovative in the field of their profession and interests.
- What toys and hobbies help you be more inventive?
- What school classes might be useful to an inventor?
- Find academic and creative clubs and organizations
- Business skills are important to profit from inventions

INVENTIVE CAREER FIELDS

- Engineer
- Scientist
- Biotechnology
- Software developer
- Horticulturist

RESOURCES

- MeritBadge.org - Inventing Workbook and resources
- Scouting.org - Official requirements and resources
- Google.com/Patents, FreePatentsOnline.com
- Makezine.com, InventorsDigest.com

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